UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,017	06/22/2007	John Moyes	INTLTD.75355	6086

27629 7590 11/08/2011

FULWIDER PATTON LLP
6060 CENTER DRIVE
10TH FLOOR
LOS ANGELES, CA 90045

EXAMINER	
WOOD, JARED M	
ART UNIT	PAPER NUMBER
1731	

MAIL DATE	DELIVERY MODE
11/08/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,017	MOYES ET AL.	
	Examiner	Art Unit	
	JARED WOOD	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-32 and 34-36* is/are pending in the application.

5a) Of the above claim(s) *34 and 35* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-9,11-14,17-32 and 36* is/are rejected.

8)☒ Claim(s) *10 and 15* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/26/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of group I comprising claims 1-32 and 36 in the reply filed on 10/12/2011 is acknowledged. The traversal is on the ground(s) that because the target metals of claims 34 and 35 are produced by the processes claims 1 and 30 respectively, that they must necessarily comprise all the features of claims 1 and 30 respectively. This is not found persuasive because, particularly in the case of gold, as provided by the examiner, the process of recovering the target metal does not alter the target metal. While claims 34 and 35 do indeed include the limitations of claims 1 and 30 respectively, these limitations provide no discernable structural characteristics to the target that must necessarily follow from the claimed recovery process steps. In essence the only limitations with patentable weight in claims 34 and 35 is the target metal itself, which, in the case of at least gold, exists in metallic form in nature. As such claims 34 and 35 include no special technical feature(s) which provide(s) a contribution over the prior art.

The requirement is still deemed proper and is therefore made FINAL.

Claims 34 and 35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10/12/2011.

Claim 33 is cancelled. Claims 1-32 and 36 are currently pending for examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 recites the limitation "the precious metal" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the

various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9, 11-14, 16, 19, 20, and 22-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0228783 (Harris et al.) in view of US 5,232,490 (Bender et al.).

As to claims 1-4, 13, and 14, Harris discloses a process for leaching a target metal from an ore, particularly nickel/cobalt from lateritic ores (¶ 0088), comprising producing HCl in a pyrohydrolysis stage from a metal chloride solution (¶ 0123-0124) wherein the cation may be calcium (¶ 0021-0023), passing the generated acid solution, which further comprises an amount of the metal (calcium) chloride, to an atmospheric leach stage (¶ 0123) where an ore such as laterite (oxidized metalliferous material) is contacted with the HCl/metal chloride solution to leach a target metal (¶ 0092, 0099), specifically nickel/cobalt, into the solution, passing the pregnant solution to at least one precipitation stage to recover the nickel/cobalt from the solution wherein the metal chloride in the solution is maintained and further generated (¶ 0121-0122) by the addition of a pH adjusting agent which may be lime (¶ 0117, 0120), and passing the target metal depleted metal chloride solution to the pyrohydrolysis stage to regenerate the HCl (¶ 0123-0124).

Harris does not disclose the addition of sulfuric acid to the metal chloride solution to regenerate the HCl.

Bender discloses a leaching process where sulfuric acid may be used to generate HCl in a metal chloride solution comprising $CaCl_2$ wherein such addition also produces a calcium sulfate precipitate (col. 9, ln. 10-32).

It would have been obvious to one of ordinary skill in the art at the time of invention to use sulfuric acid addition in place of Harris's pyrohydrolysis stage in order to prevent calcium build-up in the system when lime or another calcium containing pH adjusting agent is used in the process of Harris (col. 9, ln. 15-18).

As to claims 5, 20, 22, and 23, since the combined process of Harris and Bender seeks to recover nickel/cobalt, as opposed to precious metals or magnesium, the limitations of these claims are not relevant and are therefore rejected concurrently with the claims upon which they depend.

As to claims 6-9, 11, 12, 30, 31, Harris discloses that his leaching stage may comprise a first and second leaching step where, as shown in figure 2, the leaching is carried out counter-currently (solids from first step are passed to second step and liquids from second step are passed to first step) (¶ 0127). Bender discloses that his regeneration may be done ex situ or in situ with the leaching (i.e., second leach step) (col. 9, ln. 12-14). Harris's solid fraction is separated (including precipitates) from the pregnant leach solution and disposed of (¶ 0116).

As to claims 16, 24, and 25, Harris discloses that other value metals such as Cu, Mn, Al, and/or Cr may be present in the leach solution and may be recovered via ion exchange, solvent extraction, electrowinning, or precipitation. If more than one of the

value metals may be recovered via electrowinning, it would have been obvious to one of ordinary skill in the art at the time of invention to recover each of the value metals in an electrowinning process which is particular to each metal to provide for the most complete and pure recovery.

As to claim 26, Harris discloses that his leach solution should have an initial pH of less than 0.5 (¶ 0109). Since the leach solution of the combined disclosures has substantially the same composition, especially chloride and HCl (see treatment of claims 28 and 29 below), and pH as applicant's claimed leach solution, it would be expected that the leach solution would likewise have an Eh of ~600mv.

As to claim 27, Harris discloses carrying out leaching at a temperature of 75 °C to the boiling point of the leach solution (¶ 0110). In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990), see MPEP 2144.05.

As to claim 28, Harris discloses that his leach solution should have a total chloride concentration of 200-500 g/L (¶ 0102) which corresponds to 5.64-14.10 M. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990), see MPEP 2144.05.

As to claim 29, Harris discloses that his leach solution should have a minimum total chloride concentration of 200 g/L and that the Mg/HCl (Ca/HCl) ratio should be at least 0.1 (¶ 0102). This corresponds to a minimum $CaCl_2$ concentration of63 g/L.

As to claim 32, Harris discloses that iron is leached from the laterite and is precipitated as magnetic iron oxide and/or hematite (¶ 0109).

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0228783 (Harris et al.) in view of US 5,232,490 (Bender et al.) as applied to claim 13 above, and further in view of WO 02/22897 (Cheng).

As to claims 17 and 18, Harris discloses that leaching is conducted first at a low pH and then the pH is subsequently raised to precipitate iron oxide from the leach solution (¶ 0109) but fails to expressly disclose the means whereby the pH is to be raised. Harris further discloses that due to the high chloride concentration of his leach solution and the low activity of water iron formation of hematite and magnetic iron oxide during precipitation is favored (¶ 0097).

Cheng discloses a nickel laterite ore leaching and nickel recovery process in which limestone (calcium carbonate) is used to precipitate iron from the pregnant leach solution in an initial precipitation step (figures 2 and 3).

It would have been obvious to one of ordinary skill in the art at the time of invention to use substantially any known precipitation agent, such as the limestone suggested by Cheng, in the combined process of Harris and Bender in order to effect Harris's disclosed iron oxide precipitation especially since Cheng discloses limestone addition to a pregnant leach solution from the leaching of nickel laterite ores in an initial iron precipitation step (figures 2 and 3).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0228783 (Harris et al.) in view of US 5,232,490 (Bender et al.) as applied to claim 13 above, and further in view of WO 03/035916 (Hamalainen).

Harris discloses that copper, when present in the pregnant leach solution, may be recovered via a precipitation step (¶ 0117).

However, Harris fails to disclose the specific means for carrying out such a precipitation.

Hamalainen discloses the precipitation of a copper compound from a copper containing chloride leach solution by addition of limestone (calcium carbonate) (pg. 3, ln. 22-24).

It would have been obvious to one of ordinary skill in the art at the time of invention to use any known precipitation agent to precipitate copper from Harris and Benders chloride leach solution, especially limestone as suggested by Hamalainen because it is a well-known and inexpensive reagent (pg. 3, ln. 22-24).

Claims 21 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0228783 (Harris et al.) in view of US 5,232,490 (Bender et al.) as applied to claim 13 above, and further in view of US 3,203,786 (Wesolowski et al.)

The combined disclosures of Harris and Bender provide of nickel/cobalt precipitation by addition of a pH adjustment agent such as lime, caustic soda, or magnesium oxide (¶ 0117 and 0120).

Neither Harris nor Bender expressly provide for using calcium hydroxide (slaked lime) as a precipitation agent, especially in the precipitation of nickel/cobalt.

Wesolowski discloses selective precipitation of nickel and cobalt from an acidic leach solution by pH adjustment using lime milk (calcium hydroxide or slaked lime) (col. 2, ln. 34-41).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the lime milk disclosed by Wesolowski in place of the lime, caustic soda, or magnesium oxide of Harris being functional; expedients of one another disclosed to be used for the same purpose by the art.

Allowable Subject Matter

Claims 10 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to disclose or reasonably suggest diverting a portion of the solution from the second leaching stage back to the acid generation stage. Further, no prior art has been discovered to disclose or to reasonably suggest maintaining a prescribed amount of the metal of the metal halide in the leach solution by adding a make-up amount of the metal as a compound during target metal precipitation rather than by removing an excess amount of the metal by sulfuric acid addition during acid regeneration.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JARED WOOD whose telephone number is (571)270-5911. The examiner can normally be reached on Monday - Friday, 7:30 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JARED WOOD/
Examiner, Art Unit 1731

/J.A. LORENGO/
Supervisory Patent Examiner, Art Unit 1731